

## KENTUCKY ALIGNMENT FOR NIH SUPPLEMENT HUMAN GENETIC VARIATION

### HUMAN GENETIC VARIATION

#### Kentucky Core Content for Science Assessment: Grades 8 through 11

Activity	Standard	Description
1, 2	SC-H-3.1.3	Cells store and use information to guide their functions. The genetic information stored in DNA directs the synthesis of the thousands of proteins that each cell requires.
2, 3, 4, 5	SC-H-3.1.4	Cell functions are regulated. Regulation occurs both through changes in the activity of the functions performed by proteins and through selective expression of individual genes. This regulation allows cells to respond to their internal and external environments and to control and coordinate cell growth and division.
2, 3, 4	SC-H-3.3.1	In all organism and viruses, the instructions for specifying the characteristics are carried in nucleic acids. The chemical and structural properties of nucleic acids determine how the genetic information that underlies heredity is both encoded in genes and replicated.
1, 2, 5	SC-H-3.3.2	Multicellular organisms, including humans, form from cells that contain two copies of each chromosome. This explains many features of heredity. Transmission of genetic information through sexual reproduction to offspring occurs when male and female gametes that contain only one representative from each chromosome pair unite.
2, 3, 4, 5	SC-H-3.3.3	Changes in DNA (mutations) occur spontaneously at low rates. Some of these changes make no difference to the organism, whereas others can change cells and organisms. Only mutations in germ cells have the potential to create the variation that changes an organism's future offspring.
All activities	SC-H-3.4.1	Species change over time. Biological change over time is the consequence of the interactions of (1) the potential for a species to increase its numbers, (2) the genetic variability of offspring due to mutation and recombination of genes, (3) a finite supply of the resources required for life, and (4) natural selection. The consequences of change over time provide a scientific explanation for the fossil record of ancient life forms and for the striking molecular similarities observed among the diverse species of living organisms.
2, 3, 4, 5	<b>2.1 Scientific Ways of Thinking and Working</b>	Students will formulate testable hypotheses and demonstrate the logical connections between the scientific concepts guiding a hypothesis and the design of an experiment; use equipment, tool, techniques, technology, and mathematics to improve scientific investigations and communications; use evidence, logic, and scientific knowledge to develop and revise scientific explanations and models; design and conduct different kinds of scientific investigations; communicate and defend the designs, procedures, observations, and results of scientific investigations; review and analyze scientific investigations and explanations of other investigators, including peers.
2, 3, 4, 5	<b>2.1 Science</b>	Students will apply scientific theory and conceptual understandings to solve problems of technological design and

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	<b>and Technology</b>	examine the interaction between science and technology.
2, 3, 4, 5	<b>2.1 Personal and Social Perspectives</b>	Students will explore the impact of scientific knowledge and discoveries on personal and community health.
2, 3, 4, 5	<b>2.1 Nature of Science</b>	Students will analyze the role science plays in everyday life and investigate advances in science and technology that have important and long lasting effects on science and society.
<b>Kentucky Core Content for Reading Assessment: Grades 8 through 10</b>		
<b>Activity</b>	<b>Standard</b>	<b>Description</b>
All activities	<b>RD-H-2.0.1</b>	Locate, evaluate, and apply information for a realistic purpose.
All activities	<b>RD-H-2.0.12</b>	Make predictions and draw conclusions based on what is read.
All activities	<b>RD-H-2.0.13</b>	Analyze the content as it applies to students' lives and/or real world issues.
All activities	<b>RD-H-2.0.5</b>	Make, confirm, and revise predictions.
3, 5	<b>RD-H-2.0.7</b>	Formulate opinions in response to a reading passage.
3, 5	<b>RD-H-3.0.10</b>	Recognize the appropriateness of an argument for an intended audience.
3, 5	<b>RD-H-3.0.11</b>	Accept or reject an argument, giving supporting evidence from the passage.
1, 2, 3	<b>RD-H-4.0.12</b>	Interpret the meaning of specialized vocabulary.
<b>Kentucky Core Content for Mathematics Assessment: Grades 9 through 11</b>		
<b>Activity</b>	<b>Standard</b>	<b>Description</b>
2, 3, 4	<b>MA-H-1.2.1</b>	Students will perform addition, subtraction, multiplication, and division with real numbers in problem-solving situations to specified accuracy.
2, 3	<b>MA-H-1.3.4</b>	Students will understand how ratio and proportion can be used in a variety of mathematical contexts and to solve real-world problems.
2, 3	<b>MA-H-3.1.5</b>	Students will understand differences between theoretical and experimental probability.

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<b>1, 2, 3, 4</b>	<b>MA-H-3.2.1</b>	Students will analyze, interpret results, make decisions, and draw conclusions based on a set of data.
<b>3</b>	<b>MA-H-3.2.3</b>	Students will organize, display, and interpret statistical models (tables, graphs) of bivariate data.
<b>2, 3, 4</b>	<b>MA-H-3.2.4</b>	Students will interpret the results of a probability simulation, draw conclusions, and make predictions.